CLAIMS

1. An oscillator for outputting an oscillation signal of a voltage control oscillator via a transfer line, the oscillator comprising:

a variable resonator that is electro-magnetically connected to the transfer line, receives at least one part of the oscillation signals, and mechanically changes a resonant frequency in response to a control signal;

a detector that detects a resonant output of the variable resonator; and

a correcting circuit that transmits the control signal to the variable resonator, receives the output from the detector while sweeping the resonant frequency, and corrects a frequency of the oscillation signal to a desired frequency under the control of a modulation voltage sent to the voltage control oscillator.

2. An oscillator according to Claim 1, wherein the variable resonator comprises: a resonator; and a rotor that is arranged in proximity of the resonator and changes the shape thereof in the circumferential direction, the rotation of the rotor changes the distance between the resonator and the rotor, and the resonant frequency of the resonator changes.

3. An oscillator according to Claim 1, wherein the variable resonator is a cavity resonator, a part of a cavity forming the cavity resonator is a rotor formed by changing the shape thereof in the circumferential direction, the rotation of the rotor changes the inner dimension of the cavity, and the resonant frequency of the cavity resonator changes.

4. An oscillator according to Claim 2 or 3, wherein the rotor has a projected stripe that monotonously increases the height thereof on the outer circumference on the undersurface of a disc portion.

5. An oscillator according to Claim 2 or 3, wherein the rotor has a projected stripe with an equal height, with which the position in the radial direction changes from the outer circumference to the inner circumference on the undersurface of a disc portion, in relation to the change in the circumferential direction.

6. An oscillator according to Claim 2 or 3, wherein the rotor has a projected stripe that monotonously increases the height thereof throughout the half of the outer circumference on the undersurface of a disc portion and

monotonously reduces the height thereof throughout the remaining half.

7. An oscillator according to Claim 1, wherein the variable resonator comprises: a resonator that is placed in a cavity; and a piezoelectric actuator that is arranged facing the resonator, the expansion and contraction of the piezoelectric actuator changes the inner dimension of the cavity, and the resonant frequency of the resonator thus changes.

8. An oscillator according to Claim 1, further comprising:

in place of the correcting circuit, an abnormality detecting circuit that transmits the control signal to the variable resonator, receives the output from the detector while sweeping the resonant frequency to the variable resonator, detects the oscillation frequency of the voltage control oscillator, and detects the abnormality of the oscillation frequency and/or a modulation width of the oscillation frequency.

9. An oscillator according to Claim 1, wherein the variable resonator comprises: a resonator; and a variable reactance device, the variable reactance device comprises: a

transfer line that is electro-magnetically connected to the resonator; and a rotor that is arranged in proximity of the transfer line and changes the shape thereof in the circumferential direction, the rotation of the rotor changes the reactance in view of the transfer line, and a resonant frequency of the variable resonator changes.

10. An oscillator according to Claim 9, wherein at least one part of the rotor facing the transfer line is conductive, and capacitance is generated between the transfer line and the rotor.

11. An oscillator according to Claim 10, wherein the rotor has a projected stripe that is meandered roughly like a ring in the radial direction on the undersurface of a disc portion.

12. An oscillator according to Claim 10, wherein the rotor is formed by extending an outer wall from the undersurface of a disc portion, and the thickness of the outer wall periodically changes in the circumferential direction.

13. An oscillator according to Claim 10, wherein the rotor is formed by extending an outer wall from the

undersurface of a disc portion, and the height of the outer wall periodically changes in the circumferential direction.

14. An oscillator according to Claim 10, wherein the rotor has projected and caved portions that are repeatedly formed in the circumferential direction on the outer circumference thereof, and

the transfer line is a micro strip line and the capacitance is generated between an opening end of the micro strip line and the outer-circumferential surface of the rotor.

15. An oscillator according to any one of Claims, wherein the transfer line is a coplanar line, and capacitance is generated between a line conductor of the coplanar line and the rotor and between a ground conductor of the coplanar line and the rotor.

16. An oscillator according to Claim 15, wherein a pair of the rotors is arranged to sandwich the transfer line, and the rotors are rotated in conjunction therewith.

17. An oscillator according to Claim 9, wherein the rotor comprises a dielectric having a projected stripe that is roughly ring-shaped on the undersurface of a disc portion

and is meandered in the radial direction, and the transfer line comprises a coplanar line.

18. An oscillator according to Claim 9, wherein the rotor comprises a dielectric, the transfer line comprises a coplanar line, and the rotation of the rotor changes the distance between the rotor and the transfer line.

19. A radar apparatus comprising an oscillator according to any one of Claims 1 to 18.

20. A radar apparatus comprising an oscillator according to any one of Claims 2 to 6 or any one of Claims 9 to 18, wherein the rotor comprises a primary radiator, the rotation of the rotor changes a resonant frequency of the variable resonator, and the primary radiator scans radar waves radiated from the primary radiator in the radial direction.